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Forest Pest Management

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BIOLOGICAL EVALUATION R2-75-22

MOUNTAIN PINE BEETLE

COLORADO FRONT RANGE

ARAPAHO-ROOSEVELT, PIKE-SAN ISABEL NATIONAL FORESTS, AND ROCKY MOUNTAIN NATIONAL PARK

NOVEMBER 1975

Rocky Mountain Region

U.S. Department of Agriculture Forest Service

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BIOLOGICAL EVALUATION
MOUNTAIN PINE BEETLE

A mountain pine beetle outbreak in ponderosa pine stands along the Front Range of Colorado was evaluated by Forest Pest Management personnel during the summer and fall of 1975. This evaluation is the result of information collected on Federal lands. The infestation on State and private lands is primarily the responsibility of the State of Colorado and is being evaluated by the State. Losses were found near Westcliff in the south and continued north to just beyond the State line.

During the aerial evaluation survey it was estimated 600,000 ponderosa pine trees infested in 1974 on about 250,000 acres of Federal lands in Colorado. The 1975 estimate for mountain pine beetle infested trees, based on 1.4:1 ratio, is 850,000 trees (see Table 1).

TECHNICAL INFORMATION

Casual Agent: Dendroctonus ponderosae, Hopk., mountain pine beetle.

Host: Pinus ponderosa Laws., ponderosa pine.

Type of Damage: Mortality is occurring in groups ranging from a few trees to groups of a few thousand trees. This tree mortality is generally found in overstocked stands, although other stands may have some mortality due to site and tree conditions.

Biological Data: A few brood samples were collected in June, utilizing Knight's[1] sampling technique for mountain pine beetle in ponderosa pine. These samples showed the epidemic to be static to increasing. After beetle flight sample strips one-chain wide and one-mile long were cruised in several locations to obtain ratios of 1975 infested trees to 1974 infested trees. This survey is summarized in Table 1 and shows a mean ratio increase of 1.43:1.

DISCUSSION

Suppression efforts on Federal lands in the past year have involved chemical treatment of infested trees on National Forest and National Park lands that are within "Designated Control Areas" (DCA'S) established by the State of Colorado, and logging of infested trees and silvicultural treat-

[1] Knight, Fred B., Sequential Sampling of Black Hills Beetle Populations. Rocky Mountain Forest and Range Experiment Station. Res. Note 48, USDA Forest Service, August 1960.

ment of infested stands on National Forests.

The direct suppression on Federal lands within "DCA'S" was carried out primarily as a cooperative effort to support treatment efforts on private lands.

The chemical treatment and/or removal of beetle populations, at best, provides temporary relief from epidemic losses. In most cases, the long-term protection of stands from beetle epidemics must be accomplished through thinning of stands. The recommended thinning is to a growing stock level of 80.[2] This type of management will require periodic reentry to keep stands thinned to this level.

Some stands, particularly at the lower elevations of ponderosa pine growth, may occur on poor sites and will not attain a growing stock level of 80. For these stands, thinning of small diameter trees will help prevent stand stagnation but for larger diameter trees growing under these conditions there is, at present, no satisfactory silvicultural treatment to prevent epidemics of the mountain pine beetle.

Another factor that is an important consideration in mountain pine beetle management is dwarf mistletoe. This disease may provide epicenters for mountain pine beetle build-ups. Concentrations of heavily mistletoed trees should be discriminated against when applying silvicultural harvesting practices.

Particularly high value trees can be protected from beetle attack by application of a preventive spray prior to beetle flight. The only product registered for this use in Colorado is a pine tree and ornamental spray produced by Balcom Chemicals, Inc., 240 22d Street, P. O. Box 667, Greeley, Colorado 80631. The active ingredient in this product is carbaryl at a concentration of 4 pounds per gallon. This concentrate is mixed at the rate of 1 gallon in 23 gallons of water (1 pint in 3 gallons water) to make a spray solution containing 2% active ingredients. Apply this 2% solution during the first half of July at the rate of 1 gallon per 50 square feet of pine bark surface to obtain protection. Application should be to a height in the tree where the trunk diameter is 5 inches or less.

In the absence of stand structure improvement or natural climatic control of beetle populations, tree losses will continue. The only effective long-term method of preventing mountain pine beetle epidemics is through properly applied silvicultural practices. Direct suppression efforts may be warranted in stands where silvicultural treatments are scheduled within a few years or where the temporary reduction of beetle populations is essential to protection of high value forest resources.

[2]Meyers, Clifford A., Multipurpose Silviculture in Ponderosa Pine Stands of the Montane Zone of Central Colorado. USDA Forest Service, Rocky Mountain Forest and Range Experiment Station. Res. Paper RM-132, December 1974.

TABLE 1 - FRONT RANGE MPB SURVEY DATA SUMMARY

District	Area	Currently (1975) Infested	Infested 1974	Build-up Ratio	Currently Infested DBH	Infested 1974 DBH	Ave. B.A. Reading
Redfeather	Praire Divide	11	2	5.5:1	- -	- -	
Redfeather	Creedmore Lakes	12	29	.41:1	- -	- -	
Poudre	Moody Hill	49	48	1.02:1	10.56 ± 3.75	9.67 ± 3.16	100.00
Poudre	Salt Cabin Pk.	36	41	.88:1	7.99 ± 2.55	8.17 ± 1.99	133.33
Poudre	Redstone Ridge Rd.	210	48	4.34:1	6.74 ± 1.98	7.48 ± 2.01	157.50
South Platte	Corbin Gulch	1	36	.03:1	18.00 - -	10.04 ± 2.34	108.00
South Platte	Mill Gulch	10	13	.77:1	8.74 ± 2.53	13.01 ± 3.42	100.00
South Platte	Slaughterhouse Gulch	5	38	.13:1	6.94 ± 1.18	9.71 ± 3.13	160.00
Boulder	Gordon Gulch	49	13	3.77:1	11.49 ± 2.93	11.99 ± 4.84	122.00
	TOTAL	383	268	1.43:1	8.12 ± 2.41	9.34 ± 2.70	126.18

COLORADO FRONT RANGE MOUNTAIN PINE
BEETLE INFESTIONS ON FEDERAL LANDS
1975